

Aug. 26, 1952

F. GORDEN

2,608,239

CHAIR

Filed Sept. 9, 1949

2 SHEETS—SHEET 1

Fig. 1.

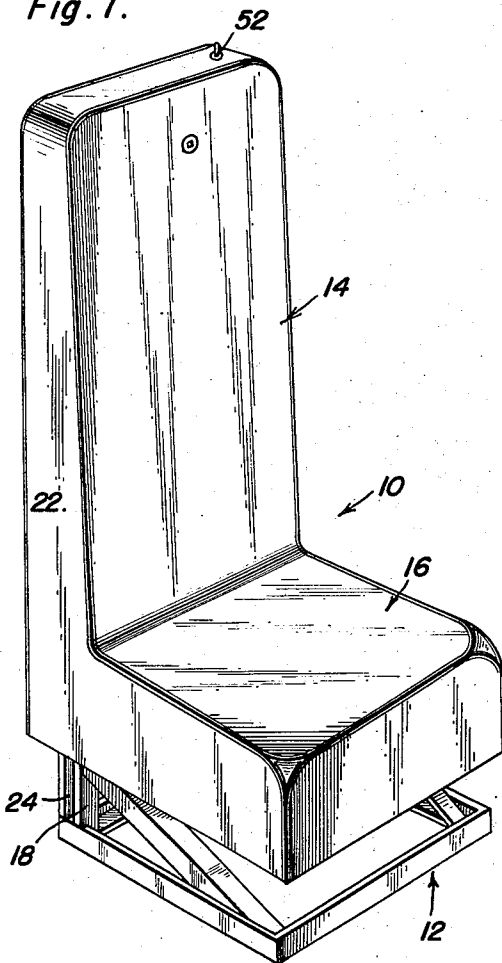


Fig. 2.

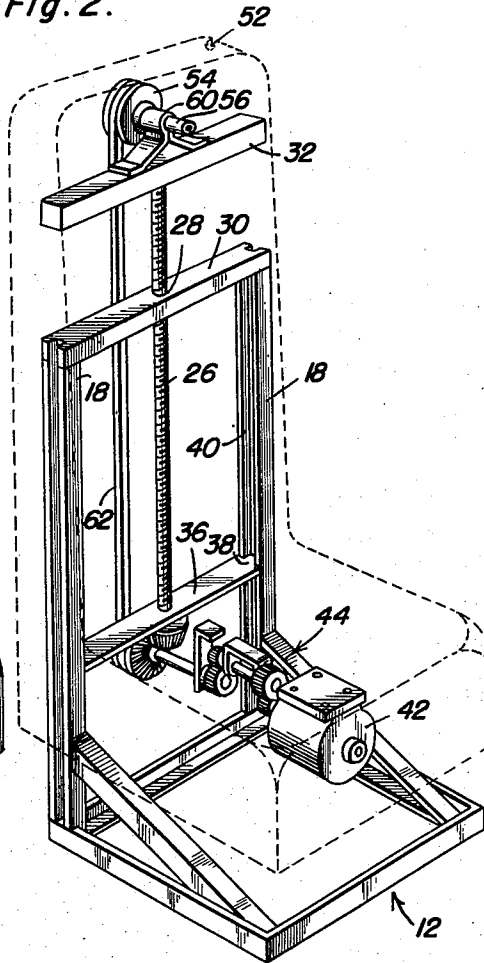
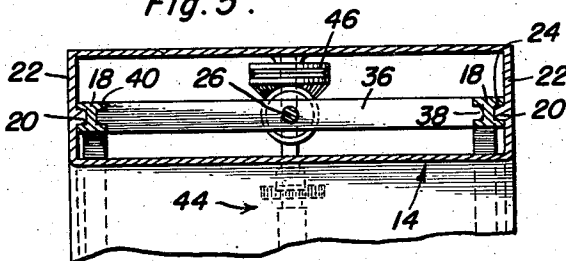


Fig. 5.



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2 SHEETS—SHEET 2

Fig. 3.

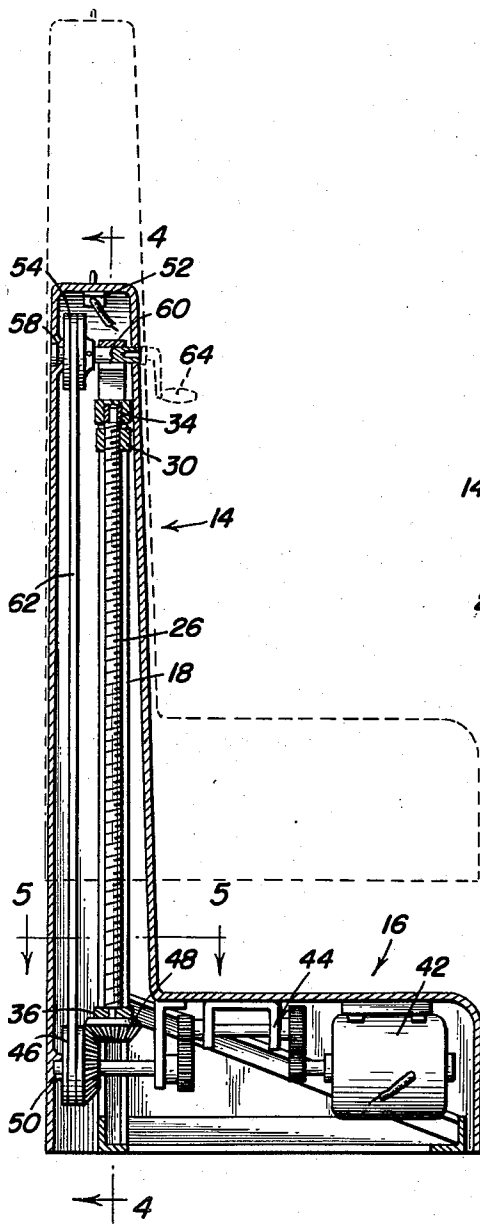
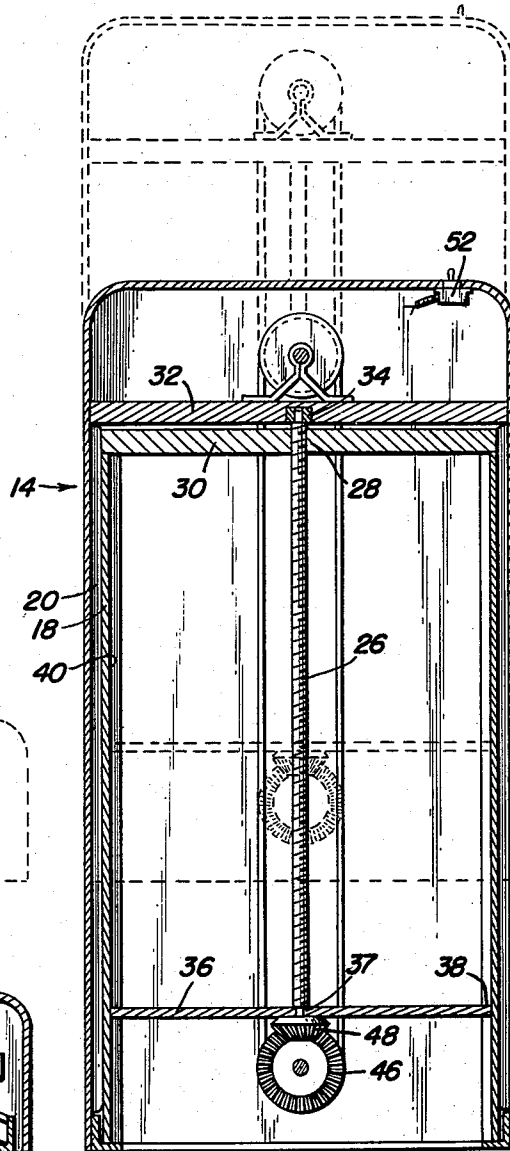


Fig. 4.



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4 Claims. (Cl. 155—88)

1

This invention relates to an improvement in adjustable chairs of the type affording height adjustment of the seat and back rest, and more particularly pertains to the improved means for guiding the adjusting movement, and improved adjusting means.

The primary object of this invention is to enable a person to adjust the height of a chair to suit his own personal requirements, whether seated on it or not.

Another object of this invention is to enable a person to adjust the height of a chair with a minimum of effort.

A meritorious feature of the invention resides in the telescoping arrangement of the seat and back rest assembly on the supporting base, thereby housing and concealing the same.

A further important feature of the present invention resides in the guide means for the seat and back rest assembly being disposed in the back rest along with the adjusting means.

A final important feature to be specifically enumerated resides in the sheltered positioning of the means for actuating the adjusting means, both of which are carried by the seat and back rest assembly.

These, together with various ancillary features and objects of the invention which will later become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated by way of example only in the accompanying drawings wherein:

Figure 1 is a perspective view of the adjustable chair;

Figure 2 is a perspective view of the adjustable chair with the seat and back rest assembly being shown in dotted outline;

Figure 3 is a central vertical sectional view of the adjustable chair, the seat and back rest assembly being shown in its lowermost position with an alternate intermediate raised position of the same being shown in dotted outline, and certain parts being shown in plan and a crank in dotted outline;

Figure 4 is a central vertical sectional view of the adjustable chair being taken at right angles to the view shown in Figure 3 and upon the plane of the section line 4—4 in Figure 3, and alternate intermediate raised position of the seat and back rest assembly being shown in dotted outline along with portions of the means for raising and lowering the same; and

Figure 5 is a horizontal sectional detail view illustrating particularly the guide means for the

2

seat and back rest assembly being taken substantially upon the plane of the section line 5—5 of Figure 3.

Reference is now made more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, and in which a hollow seat and back rest assembly that is open at the bottom is indicated generally by the numeral 10. It will be understood that the assembly 10 constitutes a chair and may be conveniently padded and provided with arm rests as desired. The assembly 10 slidably receives through its open bottom a base 12 and is adjustably supported thereby by means to be set forth hereinafter.

The assembly 10 is substantially L-shaped and includes a back rest portion 14 and a seat portion 16. The base 12 is also substantially L-shaped and includes a pair of standards or guide rails 18 which extend into the back rest portion 14.

Means is provided for guided sliding engagement of the back rest portion 14 and the guide rails 18. These means include ribs 20 which extend upwardly along the inner sides of the side walls 22 of the back rest portion 14. The ribs 20 are slidably and guidingly received in longitudinal grooves 24 provided in the adjacent sides of the guide rails 18. By this structure, it is seen that the assembly 10 may be guidingly raised and lowered on the base 12 with the guide rails 18 being received in the back rest portion 14 and that when the assembly 10 is fully lowered the lower part of the base 12 will be received in the seat portion 16. It will be readily understood that alternatively the rails 18 could be provided with a rib to engage corresponding grooves in the walls 22 for guiding movement of the assembly 10.

Means is provided for adjusting the relative position of the assembly 10 and the base 12, which include a threaded shaft 26 that extends through an internally threaded bore 28 in member 30. The member 30 connects the upper ends of the guide rails 18, thereby spacing and reinforcing the same. The upper end of the shaft 26 is suitably journaled in the back rest portion 14, as by block 32 rigidly attached to the back rest portion 14 and thrust bearing 34. The lower end of the shaft 26 is suitably journaled in a slide member 36, as at 37. The slide 36 is disposed between and has its opposite ends slidably and guidingly engaged with the guide rails 18, as by projections 38 on the slide 36 and corresponding grooves 40 in the guide rails 18, it being under-

stood that alternatively the projections could be ribs on the rails 18 and the grooves be notches in the slide 36. It is by this arrangement that the assembly 10 may be selectively raised or lowered by simply rotating shaft 26 in one direction or the other and that the threads on the shaft 26 may be so pitched as to constitute a self-locking feature of the adjustable chair when the assembly 10 is in any selected position.

Provided in the seat portion 16 of the assembly 10 are power means for rotating the shaft 26. These means conveniently comprise a reversible electric motor 42 which, through a suitable reducing gear assembly 44, drives a combination pulley and bevel gear 46 which, in turn, drives a bevel gear 48 attached to the lower end of the shaft 26. As best shown in Figure 3, the motor 42 and the reduction gear assembly 44 are attached to the seat portion 16 so as to be movable therewith, and that the seat portion 16 provides a convenient housing to protect and conceal the same. It should be noted that the combination pulley and bevel gear 46 is journaled in the assembly 10 as at 50 so as to be in continuous engagement with the gear 48 in all positions of the assembly 10 on the base 12. Through suitable electric circuits, not shown, the operation of the electric motor 42 is controlled, as by switch 52 suitably mounted upon the back rest portion 14. Manual means is provided for rotating shaft 26 which comprise a pulley 54 secured to a shaft 56 that is suitably journaled in the back rest portion 14, as at 58 and 60. An endless belt 62 is entrained over the pulley 58 and the combination pulley and bevel gear 46 so that a crank 64 (indicated in dotted outline in Figure 3) may be used to drive the gear 48, and consequently raise or lower the seat and back rest assembly 10. It will be evident that either the power means or the manual means for rotating the shaft 26 would be either one sufficient for the purposes intended and that the adjustable chair need only embody one of the two means. The preferred construction embodies both means for the chair's operation, as the chair will undoubtedly find use where electric power is unavailable or is not dependable. The important point to note is that either or both of the means for operation of the chair are housed within and concealed by the hollow seat and back rest assembly 10.

The present invention has numerous advantages, perhaps the most important of which is the novel guide means for the assembly 10 on the base 12 that permits an adjusting movement that corresponds substantially in magnitude to the length of the guide rails 18 and the disposal of the guide means within the hollow back rest portion 14. The housing of the means for actuating the shaft 26 within the assembly 10 so as to be enclosed thereby at all times has certain practical advantages over the usual forms of adjustable chairs in addition to permitting a much neater and more attractive appearance of this article of furniture. These practical advantages include protecting the moving parts from dust and grit, thereby prolonging the life of the adjustable chair and the decided advantage of positioning the moving parts out of reach of the prying fingers of children or where they could injure or damage clothing or the like.

Although they have been illustrated as being perpendicular, it will be readily understood that the guide rails 18 may be backwardly inclined as desired, and that the seat portion 16 and the back rest portion 14 may be so shaped as to provide

the maximum degree of comfort for the person seated thereon.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. An adjustable chair construction comprising a base and a pair of parallel upstanding guide rails carried thereby, a transverse member connecting the upper ends of the guide rails and having an internally threaded aperture there-through, a slide disposed between the guide rails and in sliding and guided engagement therewith, a seat and back rest assembly, assembly guiding means carried by the assembly and in sliding engagement with the guide rails, a threaded shaft parallel to the guide rails and threaded through said aperture, said shaft being journaled in the slide and secured against axial movement relative thereto, means operatively connecting the upper end of the shaft to the assembly for raising the latter upon upward movement of the shaft, and means for rotating the shaft.

2. An adjustable chair construction comprising a base and a pair of parallel upstanding guide rails carried thereby, a transverse member connecting the upper ends of the guide rails and having an internally threaded aperture there-through, a slide disposed between the guide rails and in sliding and guided engagement therewith, a seat and back rest assembly, assembly guiding means carried by the assembly and in sliding engagement with the guide rails, said assembly including a seat portion overlying the base and a hollow back rest portion receiving the guide rails therein, a threaded shaft parallel to the guide rails and threaded through said aperture, said shaft being journaled in the slide and secured against axial movement relative thereto, means operatively connecting the upper end of the shaft to the assembly for raising the latter upon upward movement of the shaft, and means for rotating the shaft.

3. An adjustable chair construction comprising a base and a pair of parallel upstanding guide rails carried thereby, a transverse member connecting the upper ends of the guide rails and having an internally threaded aperture there-through, a slide disposed between the guide rails and in sliding and guided engagement therewith, a seat and back rest assembly, assembly guiding means carried by the assembly and in sliding engagement with the guide rails, a threaded shaft parallel to the guide rails and threaded through said aperture, said shaft being journaled in the slide and secured against axial movement relative thereto, means operatively connecting the upper end of the shaft to the assembly for raising the latter upon upward movement of the shaft, and means for rotating the shaft, said last means including an electric motor carried by the assembly and operatively connected to the shaft, electric circuit means for energizing said motor and an electric switch mounted on

the assembly for controlling the operation of such means.

4. An adjustable chair construction comprising a base and a pair of parallel upstanding guide rails carried thereby, a transverse member connecting the upper ends of the guide rails and having an internally threaded aperture therethrough, a slide disposed between the guide rails and in sliding and guided engagement therewith, a seat and back rest assembly, assembly guiding means carried by the assembly and in sliding engagement with the guide rails, a threaded shaft parallel to the guide rails and threaded through said aperture, said shaft being journaled in the slide and secured against axial movement relative thereto, means operatively connecting the upper end of the shaft to the assembly for raising the latter upon upward movement of the shaft, and means for rotating the shaft, said last means comprising a further shaft mounted on the assembly for rotation, meshed gears fixed

on the shafts, and means operable by a crank for manually rotating said further shaft.

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